

Appl. No.: 10/087,484
Amtd. Dated: July 15, 2004
Reply to Office Action of: April 30, 2004

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Cancel claims 1-26.

Insert new claims 27-40 as follows:

27. (new) A method of producing a ≥ 4 kilohertz repetition rate excimer laser having a ≥ 4 kilohertz laser beam and a second laser beam suitable for annealing optical components of the laser, said method comprising:

providing a ≥ 4 kilohertz repetition rate excimer laser for producing a first ≥ 4 kilohertz repetition rate laser beam and a second laser beam suitable for annealing optical components of the laser, said laser comprised of a laser chamber and a first and a second discharge electrode, said laser chamber having a first optical fluoride crystal window and a second optical fluoride crystal window with a laser gas for generating said first and second laser beams sealed in said chamber between said optical fluoride crystal windows;

wherein an electrical discharge from said first electrode supplies energy to said laser gas to produce a ≥ 4 kilohertz repetition rate laser beam and an electrical discharge from said second electrode supplies energy to said laser gas to produce said second laser beam for annealing said optical components, and

oscillating said first laser beam whereby the first laser beam exits said first optical fluoride crystal window of said chamber and passing the first laser beam through said second optical fluoride crystal window of the chamber to provide said ≥ 4 kilohertz repetition rate excimer laser beam; and

oscillating said second laser beam whereby the second laser beam exits said first optical fluoride crystal window of said chamber and passing the second laser beam through said second optical fluoride crystal window of the chamber to provide said second annealing laser beam;

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wherein the first ≥ 4 kilohertz repetition laser beam has a pulse energy \geq 10mJ/pulse; and

wherein at least one of said optical fluoride windows is a barium fluoride window.

28. (new) The method according to claim 27 comprising using an argon fluoride excimer laser gas.

29. (new) The method according to claim 27 comprising using a krypton fluoride excimer laser gas.

30. (new) The method according to claim 27, wherein said second laser beam is generated and used to anneal said optical fluoride components before, during and after the operation of said first laser beam.

31. (new) An excimer laser comprising:
A chamber having one or more windows comprising an optical fluoride;
a first source for a first excimer laser beam within said chamber; and
a second source within said chamber for a second laser beam for annealing the one or more of said comprising optical fluoride crystal windows;
wherein said first and second laser beams are generated in said chamber by a first and a second discharge electrode, respectively, and
said second annealing laser beam can be operated for annealing said windows before, during or after operation of said first laser beam, and
at least one of said windows is a barium fluoride window.

32. (new) The excimer laser according to claim 31, wherein the laser beam has a pulse energy greater than or equal to 10 mJ.

33. (new) The excimer laser according to claim 31, wherein the first laser beam has a repetition rate of greater than or equal to 4 KHz.

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34. (new) The excimer laser according to claim 32, wherein the first laser beam has a repetition rate of greater than or equal to 4 KHz.

35. (new) The excimer laser according to claim 31 comprising argon fluoride as source gas for the first and second laser beams.

36. (new) The excimer laser according to claim 32 comprising argon fluoride as source gas for the first and second laser beams.

37. (new) The excimer laser according to claim 33 comprising argon fluoride as source gas for the first and second laser beams.

38. (new) The excimer laser according to any one of claims 31 comprising a krypton fluoride source gas for the first and second laser beams.

39. (new) The excimer laser according to any one of claims 32 comprising a krypton fluoride source gas for the first and second laser beams.

40. (new) The excimer laser according to any one of claims 33 comprising a krypton fluoride source gas for the first and second laser beams.